

# An Assessment of South Carolina Higher Education Facilities Conditions & Measuring Deferred Maintenance

*Tri-Association Facility Managers Conference  
Madren Center, Clemson University  
November 6, 2007*

# Why Facilities Matter

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- Provide atmosphere for learning
- Among state's most valuable assets and represent taxpayer investment
- Need to invest in facilities to remain competitive
- 2006 study reinforced the notion that facilities play an important role in recruitment and retention of students (*The Impact of Facilities on Recruitment and Retention of Students* by David Cain and Gary L. Reynolds)

# General Facts of Higher Ed Facilities

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- 1 out of every 4 buildings that the State of South Carolina insures can be found on the campus of a public college or university
- 1,516 buildings with approximately 43.6 million gross square feet (GSF) (as of fall 2006)
- Approximately 3,800 acres maintained at over 80 locations (as of fall 2006)
- 343 residential facilities with approximately 29,000 beds (September 2006 survey)

# Background

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- 1994 Study –
  - Joint study between CHE & Budget & Control Board
  - Assessment format developed using APPA standards
  - Identified \$173 million backlog
- 2003 Study –
  - Institutions completed building condition surveys in absence of independent statewide study
  - Updated study found backlog of deferred maintenance of \$603 million

# Scope of Current Study

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- Update 2003 study
- Continual interest in “deferred maintenance” by executive and legislative branches and CHE
- Institutions used established evaluation format to conduct assessment
- Facilities included in study:
  - Classified as 25% or more E&G as of fall 2006 CHEMIS data report (allowances were made for new facilities not yet captured)
  - Only owned facilities (per CHEMIS report)
  - 918 buildings were included in the study



# Limitations of Study

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- Individual institution assessment styles
- “Not-applicable systems”
  - Recognized after surveys were submitted
  - Rated with score of “1” (in general, did not materially affect overall condition)
  - Lack of system is an upgrade, not deferred maintenance which is not adequately accounted for
- Infrastructure not included
  - Deferred reporting for one year in order to determine appropriate method for measurement

# Methodology

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- Assessment format included:
  - Form collected building vitals, replacement value
  - Systems Evaluations
    - Foundation, roof, windows, heating, cooling, electrical, etc.
    - Range of 1-5 (1: satisfactory, 5: replace)
  - Average system generated multiplier which was multiplied by system percentage of building (See example)

# Evaluation Example

## 2007 BUILDING CONDITION SURVEY

Page 1

Institution Name: MUSC

Respondent: Steve Kincaid  
Name

Building Number: 232

Building Name: 25 Ehrhardt Street

Telephone: 792-8785

Location:

E-Mail: [kincaids@musc.edu](mailto:kincaids@musc.edu)

Gross Square Feet: 2,403

Year Const / Renov: 1962

COMPLETED SURVEYS ARE DUE TO CHE  
NO LATER THAN MAY 4, 2007

Replacement Cost: \$231,878

Comments:



Please do not enter data in the cells below this line. Begin data entry on Page 2.

	System Avg. Score	Multiplier		System % of Building		Current % Value Bldg.
Foundation	1.000	1.000	x	0.13	=	0.1300
Exterior Walls	2.125	0.763	x	0.13	=	0.0991
Floor	1.500	0.900	x	0.07	=	0.0630
Roof	1.000	1.000	x	0.07	=	0.0700
Interior Walls	2.500	0.650	x	0.03	=	0.0195
Windows	3.000	0.500	x	0.02	=	0.0100
Doors	1.400	0.920	x	0.01	=	0.0092
Ceiling	2.500	0.650	x	0.03	=	0.0195
Heating	2.375	0.688	x	0.10	=	0.0688
Cooling	3.375	0.388	x	0.10	=	0.0388
Plumbing	3.111	0.467	x	0.08	=	0.0373
Electrical	2.375	0.688	x	0.08	=	0.0550
Elevators	1.000	1.000	x	0.01	=	0.0100
Safety	1.333	0.933	x	0.05	=	0.0467
Design Standards	1.667	0.867	x	0.09	=	0.0780
<b>Agency Rating:</b>				<b>1.00</b>		<b>0.755</b>

<b>Replacement Cost:</b>	\$231,878
<b>Building Condition:</b>	75
<b>Maintenance Need:</b>	\$57,970

Bldg. Avg. Grade	Condition Code	Condition Multiplier	Difference
1	Satisfactory	1.00	
2	Remodel A	0.8	-0.2
3	Remodel B	0.5	-0.3
4	Remodel C	0.2	-0.3
5	Replace	0.00	-0.2

Building Name:

25 Ehrhardt Street

Building Number:

232

Foundation 1 - 2 - 3 - 4 - 5	Rating
Cracked Walls	1
Foundation Settlement	1
Foundation Deterioration	1
Design Load	1
<b>Average</b>	<b>1</b>

Roof System 1 - 2 - 3 - 4 - 5	Rating
Physical Condition	1
Leaks	1
Drainage	1
Insulation	1
Fire Rating	1
Design Load	1
<b>Average</b>	<b>1</b>

Age of Roof Cover:	9
Type of Roof Cover:	shingles
Flat:	
Pitched:	X

Exterior Wall System 1 - 2 - 3 - 4 - 5	Rating
Physical Condition	2
Waterproofing	2
Caulking	2
Pointing	2
Code Compliance	1
Insulation	2
Maintainability	3
Painting	3
<b>Average</b>	<b>2.125</b>

Interior Wall System 1 - 2 - 3 - 4 - 5	Rating
Physical Condition	2
Strength & Stability	2
Acoustical Quality	2
Appearance	3
Adaptability	3
Maintainability	3
<b>Average</b>	<b>2.5</b>

Floor System 1 - 2 - 3 - 4 - 5	Rating
Structural Condition	1
Maintainability	2
Floor Finish	3
Vibration	1
Fire Rating	1
Design Load	1
<b>Average</b>	<b>1.5</b>

Window System 1 - 2 - 3 - 4 - 5	Rating
Physical Condition	3
Appearance	3
Functional Ability	3
Infiltration	3
Maintainability	3
<b>Average</b>	<b>3</b>

<b>Door System</b> 1 - 2 - 3 - 4 - 5	Rating
Door Leaf	1
Frame	2
Hardware	2
Security	1
Fire Rating	1
<b>Average</b>	<b>1.4</b>

<b>Ceiling System</b> 1 - 2 - 3 - 4 - 5	Rating
Structural Condition	2
Accoustical	2
Accessibility	3
Appearance	3
<b>Average</b>	<b>2.5</b>

<b>Heating System</b> 1 - 2 - 3 - 4 - 5	Rating
Heating Capacity	2
Temperature Control	2
Noise Level	2
Air Circulation & Vent	3
Reliability	2
Reasonable Energy Consumption	2
Filtration	3
Humidity	3
<b>Average</b>	<b>2.375</b>
Age of System:	16
Heating Capacity-BTUs:	50,000

<b>Cooling System</b> 1 - 2 - 3 - 4 - 5	Rating
Cooling Capacity	4
Reasonable Energy Consumption	3
Temperature	3
Noise Level	3
Air Circulation & Vent	3
Reliability	3
Filtration	4
Humidity	4
<b>Average</b>	<b>3.375</b>
Age of System:	16
Cooling Capacity-Tons:	5

<b>Plumbing System</b> 1 - 2 - 3 - 4 - 5	Rating
Water Pressure & Supply Quantities	3
Sanitation Hazards or Cross Functions	2
Drain & Waste Function	3
Fixture Quantities	4
Fixture Types & Cond.	4
Wheel Chair Fixtures	4
Restroom Facilities	4
Roof Drainage	1
Site Drainage	3
<b>Average</b>	<b>3.1111</b>

<b>Electrical System</b> 1 - 2 - 3 - 4 - 5	Rating
Safety Conditions	3
Service Capacity	3
Panel Capacity	3
Convenience Outlets	3
Light Levels	3
Fixtures	2
Emergency Power	1
Exit Lighting	1
<b>Average</b>	<b>2.375</b>

<b>Elevator System</b> 1 - 2 - 3 - 4 - 5	Rating
Size & Number	1
Maintainability	1
Code Compliance	1
<b>Average</b>	<b>1</b>

<b>Safety Standards</b> 1 - 2 - 3 - 4 - 5	Rating
Means of Egress	1
Fire Ratings	1
Extinguishing Systems	1
Detection & Alarm Sys.	2
Lighting Systems	2
Handicap Access	1

<b>Design Standards</b> 1 - 2 - 3 - 4 - 5	Rating
Flexible Design	3
Suitable for Present Use	1
Gross to Assignable Area	1
<b>Average</b>	<b>1.6667</b>

# Methodology (continued)

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- Calculation of routine needs and backlog:
  - Routine maintenance is 3% of replacement value (APPA standard)
  - Acceptable level of deferred maintenance is 10% (i.e. condition of 90 or higher) (APPA standard)
  - Deferred maintenance is difference of “acceptable level” and “actual condition”

# Calculating Maintenance Needs

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- Routine maintenance is three percent of replacement value
  - 2008-09 MRR will be updated to reflect this change
- Technical Colleges
  - Maintenance not funded through MRR (DTC & TCL exempted)
  - Colleges report county funds do not meet all needs
- \$136 million annual need
  - Includes all technical colleges



# Deferred Maintenance Backlog

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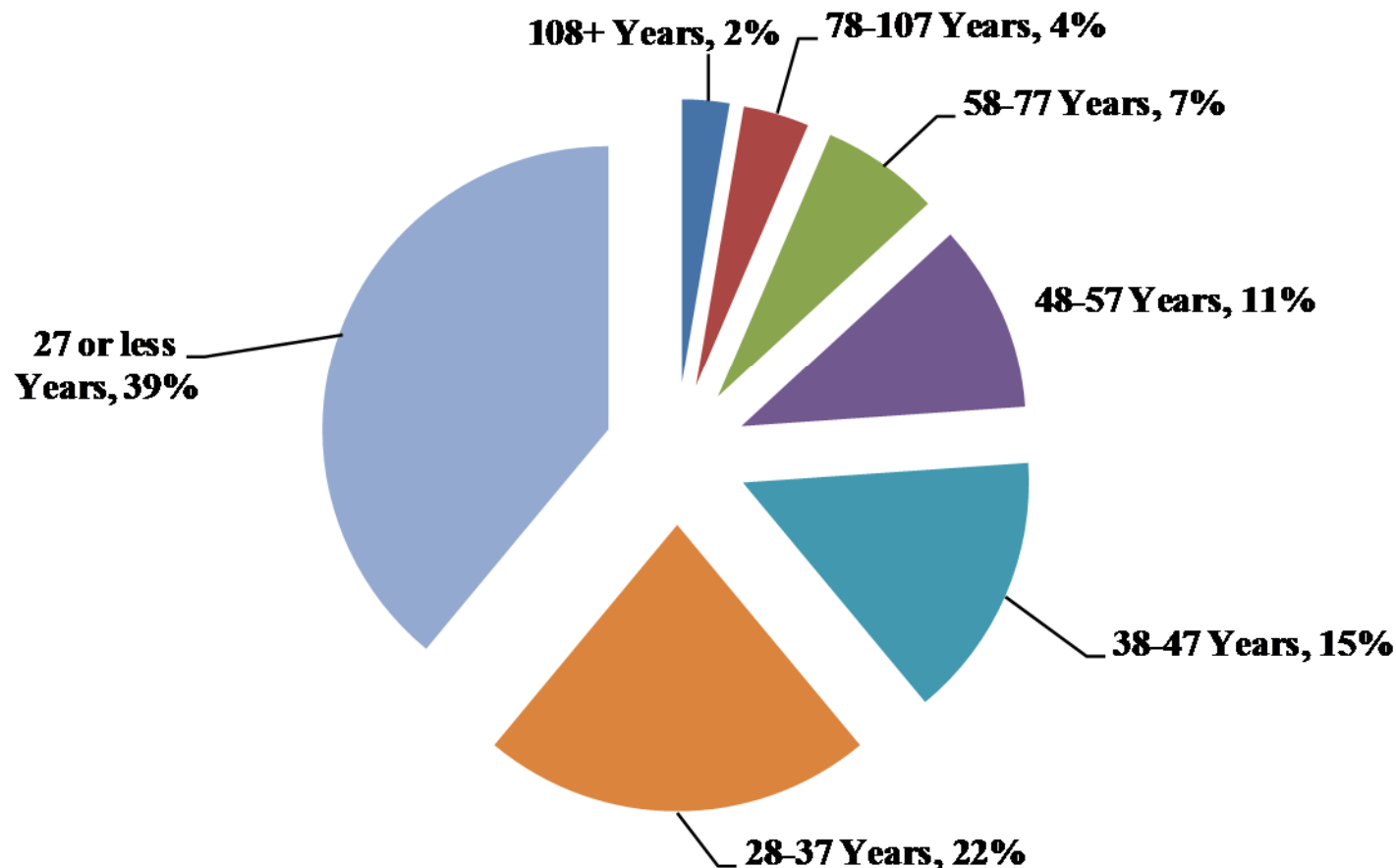
- Defined as: “*maintenance and repair deficiencies that are unfunded or unplanned and are deferred to a future budget cycle or postponed until funds are available*” (Harvey Kaiser)
- \$797 million backlog identified
  - 32% increase since 2003 study
  - 360% increase since 1994 study
  - Not adjusted for inflation

# Problem: Aging Facilities

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- 1 million GSF (or 2%) is 108 years or older
  - Challenge of restoration costs
- Rapidly-changing technology needs
- Average facility age by sector:
  - Research – 59 years
  - Teaching – 49 years
  - USC Branches – 45 years
  - Technical – 27 years

## **Age of Buildings by Gross Square Foot** **SC Public Colleges & Universities - Fall 2006**



*Source: CHEMIS fall 2006 building data summary report*

# Problem: Inadequate Funding

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- MRR has not been fully funded in several years
- Lump-sum allocations from General Assembly to institutions
- No bond bill since 2000
- No predictive capital funding source to address routine maintenance, renovation, replacement, and new construction
- Stresses capital planning process!

# Deferred Maintenance Plans

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- August 2006 – CHE adopted recommendations to improve the facilities approval process
  - Recommendation 5: “Require each higher education institution to develop and submit for CHE approval a funding plan to bring its deferred maintenance to an acceptable level.”
  - Way to report progress made to reduce backlog
  - Provide concise document to interested stakeholders
- August 2007 – Institutions submitted plans for first year
  - Facilities Advisory Committee developed parameters for calculating deferred maintenance and reporting elements for plans
  - Snapshot of needs and proposed approaches to address



# What Are Other States Doing?

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- Kansas

- Fall 2006 report identified \$727 million backlog
- 2007 legislative session – Small victory with 5-year, \$90 million maintenance plan

- Florida

- November 2006 facilities task force report identified \$3.4 billion need for new space
- Report also identified need for expanding revenue streams for construction, maintenance, and deferred maintenance

# Other States (continued)

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- Kentucky

- April 2007 independent study found needs for:
  - \$5.3 billion for system renewal
  - \$860 million for adequacy or fit-for-use improvements
  - \$6.4 billion for new buildings

- North Carolina

- General Assembly mandated 1997 study to examine capital equity and adequacy
- Report identified \$6.9 billion need for renovation and modernization, current capacity, future capacity, and other needs
- Resulted in NC voters approving \$3.1 billion bond bill in 2000

# Recommendations

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- 20-year plan to reduce backlog
  - \$40 million a year
  - Infrastructure yet to be included (anticipated summer/fall 2008)
- Full funding of the MRR
  - CHE will continue to advocate for full funding of the MRR to include annual maintenance needs
- Other solutions
  - CHE and institutions prepared to work with appropriate entities to find viable solutions
  - Higher Education Study Committee – Facilities advisory group to develop recommendations for inclusion in a statewide strategic plan for higher ed

# More Information

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- CHE Website

- <http://www.che.sc.gov/DeferredMaintenance/DMHome.htm>
- Includes report, campus building facts, institutional deferred maintenance plans, and links to other facilities-related information

- CHE Staff Contact

- Alyson Goff, Program Manager for Facilities
  - (803) 737-9930
  - [agoff@che.sc.gov](mailto:agoff@che.sc.gov)